Statistics
Spring 2023
Lecture 15

Feb 19-8:47 AM

Complete the chart below

Class limits	Class MP	Class F	Cum. F
17 – 27	22	8	8
28 – 38	33	12	20
39 – 49	44	18	38
50 – 60	55	2	40

1) CW = 28 − 17 = 11

28 + 11 = 39

39 + 11 = 50

CW = 11

2) $n = 40$

3) 4 classes

4) Find $\bar{x}$, S, and n.

Grouped data

Class MP → L1

Class F → L2

1-Var Stats with L1 & L2

$\bar{x} = 36.85$

$S = S_x = 9.502$

$n = 40$

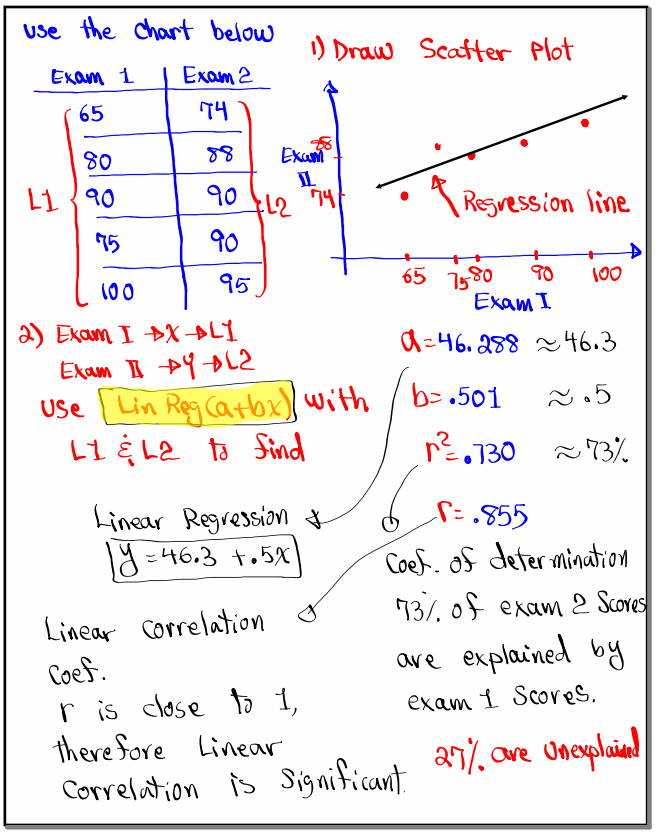
5) Find S^2 in reduced fraction.

VARS | 5: Statistics | 3: S_x

x^2 | MATH | 1: ▶Frac | Enter

$S^2 = \frac{11737}{130}$

Mar 2-7:15 AM



Mar 2-7:32 AM

Predict exam 2 Score for someone who made 88 on exam 1 if we assume

1) r is Significant. use Regression line

$y = 46.3 + .5x = 46.3 + .5(88) = 90.3 \approx 90$

2) r is not Significant. Use $\bar{y}$

VARS | 5: Statistics | 5: $\bar{y}$ | Enter

$\bar{y} = 87.4 \approx 87$

Mar 2-7:46 AM

Consider the chart below

x	y	x^2	y^2	xy
2	9	4	81	18
3	14	9	196	42
5	20	25	400	100
4	19	16	361	76

Use 2-Var Stats to find

$\Sigma x = 14$ $\quad \Sigma y = 62$

$\Sigma x^2 = 54$ $\quad \Sigma y^2 = 1038$

$n = 4$ $\quad \Sigma xy = 236$

use formulas to find eqn of regression line

$y = a + bx$

$$a = \frac{\Sigma y \Sigma x^2 - \Sigma x \Sigma xy}{n\Sigma x^2 - (\Sigma x)^2} = \frac{62 \cdot 54 - 14 \cdot 236}{4 \cdot 54 - 14^2} = \frac{44}{20}$$

$$= \boxed{2.2}$$

$$b = \frac{n\Sigma xy - \Sigma x \Sigma y}{n\Sigma x^2 - (\Sigma x)^2} = \frac{4 \cdot 236 - 14 \cdot 62}{4 \cdot 54 - 14^2} = \frac{76}{20}$$

$$= 3.8$$

$y = a + bx \Rightarrow \boxed{y = 2.2 + 3.8x}$

Mar 2-7:52 AM

use the formula to find the linear correlation coef. r

$$r = \frac{n\Sigma xy - \Sigma x \Sigma y}{\sqrt{n\Sigma x^2 - (\Sigma x)^2} \cdot \sqrt{n\Sigma y^2 - (\Sigma y)^2}}$$

$$= \frac{4 \cdot 236 - 14 \cdot 62}{\sqrt{4 \cdot 54 - 14^2} \cdot \sqrt{4 \cdot 1038 - 62^2}} = \frac{76}{\sqrt{20}\sqrt{308}}$$

$$= \frac{76}{\sqrt{6160}} \approx \boxed{.968}$$

Find r^2, coef. of determination, in whole %

$r^2 = (.968)^2 = .937 = 93.7\% \approx \boxed{94\%}$

Mar 2-8:04 AM

A box has 5 Red, 8 Blue, and 12 white color balls. If one ball is randomly taken,

1) $P(\text{Red}) = \frac{5}{25} = \frac{1}{5} = .2$

2) $P(\overline{\text{Blue}}) = 1 - P(\text{Blue}) = 1 - \frac{8}{25} = \frac{17}{25} = .68$

3) $P(\overbrace{\text{Red}}^{5} \text{ OR } \overbrace{\text{Blue}}^{8}) = \frac{5+8}{25} = \frac{13}{25}$

4) $P(\underbrace{\text{Red and Blue}}_{\text{Impossible Event}}) = 0$ Do not use ∅ for 0.

Mar 2-8:12 AM

I Surveyed 80 students. Total = 80

15 were taking Math only

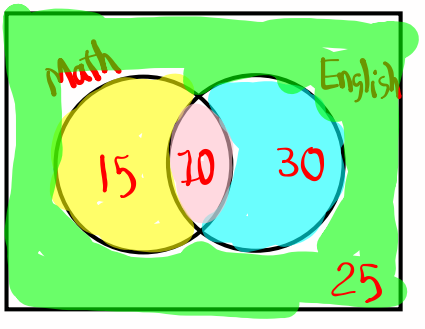
30 " " English only

25 were not taking Math or English.

Construct Venn Diagram.

10 were taking Math and English

Total = 80



Mar 2-8:18 AM